SHORT COMMUNICATIONS

THE RELATIONSHIP OF NICOTINIC ACID TO THYROID FUNCTION*

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NICOTINIC ACID when used at a dosage level of three grams per day per human adult lowers serum cholesterol levels in rabbits,[1] young volunteers,[2, 3] patients suffering from a variety of illnesses,[2] schizophrenic patients,[4] arteriosclerotic patients in a mental hospital,[5] and patients suffering from cardiovascular disease.[6] At the same time, there is an increase in the basal metabolic rate (B.M.R.).[3, 4] In these activities, nicotinic acid resembles desiccated thyroid or thyroxin or, even more, triac (acetic acid analogue or triiodothyronine) which increases the B.M.R. less than thyroxin.[7]

Over the past few years, a study of a single case of postoperative exophthalmic goitre which responded to nicotinic acid has suggested a third similarity, i.e., an inhibitor effect on the anterior pituitary gland or an action antagonistic to thyrotrophic stimulating hormone. This case will perhaps stimulate additional investigation of the similarity of activity between nicotinic acid and the thyroid hormones.

CASE HISTORY

Seventeen years previously (1940), the patient, then a man of 38, began to complain of severe anxiety, fatigue, loss of weight, profuse perspiration and marked exophthalmos, and developed marked exophthalmic goitre. About six weeks after its onset, the patient had a subtotal thyroidectomy and made a partial recovery. In 1942, the patient developed slight exophthalmos and diplopia when fatigued, with profuse lacrimation and reddening of his eyes.

In 1946, the exophthalmos became more marked and was associated with an increase in perspiration and loss of weight. The B.M.R. then was plus 12. He was treated with small quantities of desiccated thyroid. This was maintained until 1948. At that time, exophthalmos was still evident but had not increased. The diagnosis was of recurrent hyperthyroidism not requiring further operation.

In January 1954, the patient complained of bleeding gums, severe pain in his legs and feet and much perspiration in both hot and cold weather. The bleeding of the gums did not respond to massive quantities of ascorbic acid. He suffered spells of complete exhaustion and fatigue, was severely fatigued by ordinary work and usually arose in the morning tired and exhausted. He had difficulty in falling asleep. He was sluggish and had to perform activities slowly in order to avoid errors. On the Cornell Medical Index Questionnaire, he scored 24 positive responses (none in subsection N to R, i.e., in area of neurosis). Vision was very bad at this time. When judging distance, as when driving a car, he frequently had to close one eye because of the diplopia. The exophthalmos was troublesome but maintained under partial control by desiccated thyroid.

The patient was not neurotic or psychotic at this or at any previous time.

In May 1954, the patient began to take three grams of nicotinic acid per day and discontinued the thyroid. For the first month, he noted little change. He had less difficulty with insomnia. Then his eyes began to redden and tear profusely. During the second month, his eyes began to regain their normal appearance, and the patient began to feel more comfortable. He now lost his heat intolerance and was able to sleep covered by a blanket. His vision became normal and diplopia disappeared. His skin lost its dry, harsh texture and became normal.

In January 1955, seven months after starting on nicotinic acid, the patient was able to see well, little exophthalmos was evident and the patient was essentially well. On the Cornell Medical Index Questionnaire, he replied "yes" 11 times. Since then, the patient has continued to take nicotinic acid and at present (June 1957) is well mentally and physically.

DISCUSSION

There is an interesting parallelism between the physiological activity of nicotinic acid and of thyroid hormone in that they: (1) lower serum cholesterol levels; (2) elevate the basal metabolic rate (markedly for thyroid but slightly for nicotinic acid); and (3) may have an anti-exophthalmic property. It is, however, possible that the patient had a spontaneous remission after cessation of desiccated thyroid although this does not appear probable. However, this single case does, in my opinion, warrant further clinical trials with nicotinic acid.

SUMMARY

A case of postoperative exophthalmic goitre is reported which apparently responded to treatment with nicotinic acid.

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